John L. Carmichael Jr. Sundial Sculptures 925 E. Foothills Dr. Tucson AZ 85718
Tel: 520-696-1709, Email: jlcarmichael@comcast.net , Website: sundialsculptures.com

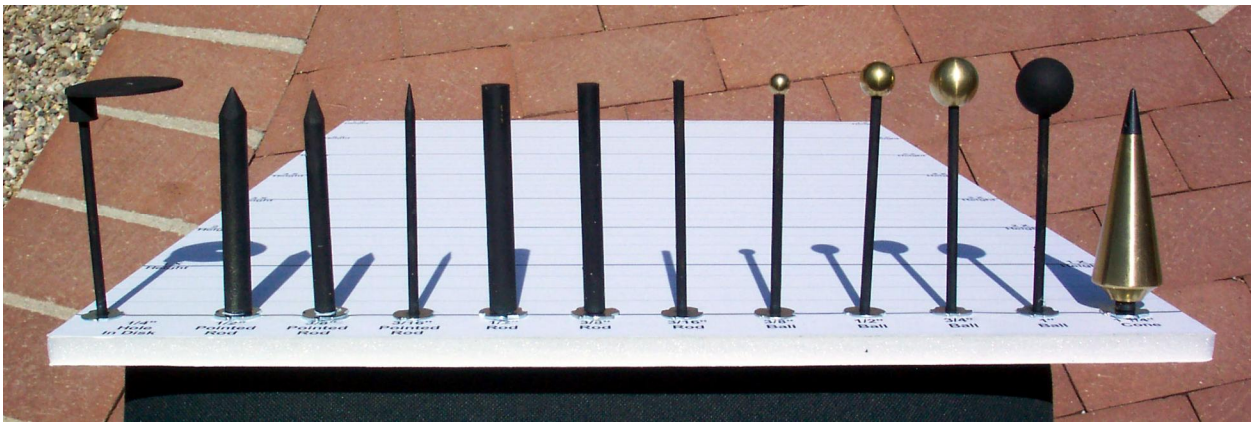
Nodi Shadow Experiment

Purpose: To determine which types of sundial nodi cast the easiest to read shadows and produce the most precise readings.

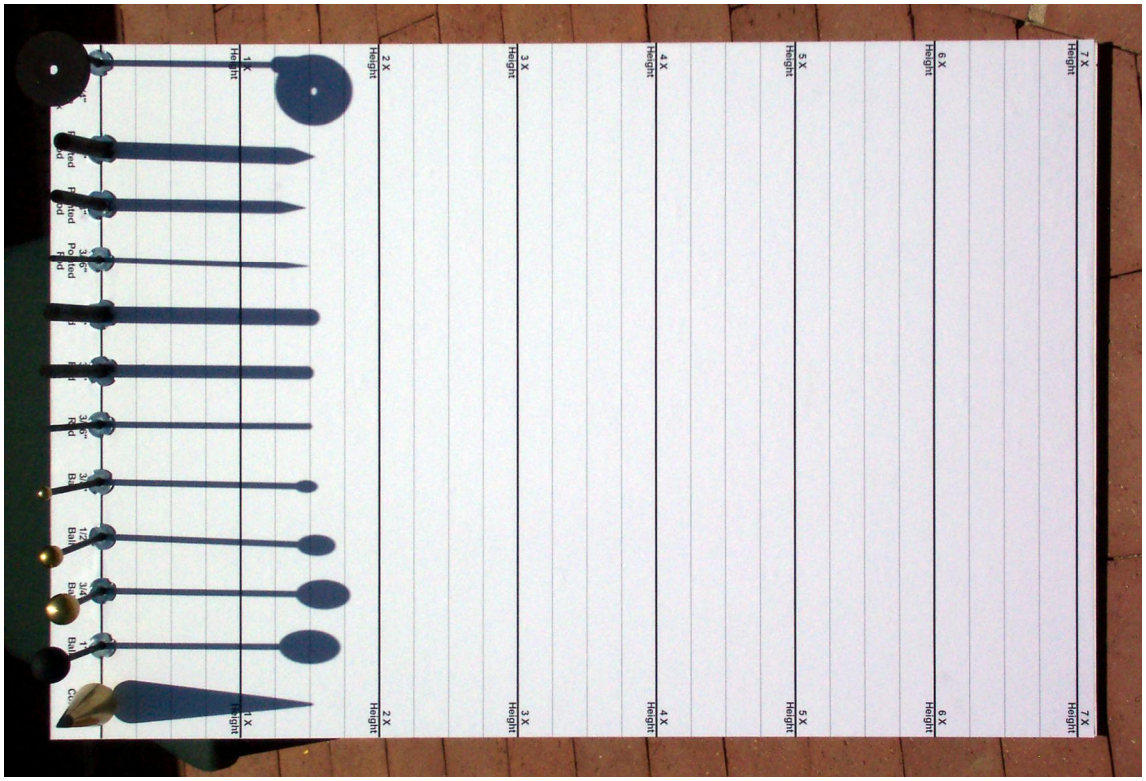
Setup: I made twelve common but different sundial nodi. I compared ball nodi of different diameters on posts, truncated rods and pointed rods, thick rods and thin rods, a cone, and a hole-in-disk nodus. All of them were 4" tall and spaced evenly apart in a row attached to one end of a flat board that I marked with parallel measuring lines in inches and as multiples of the height vs. the length of the shadows.

Execution: By tilting the board in the sun, I could lengthen or shorten the shadows and observe the effect that the sun's angle had on the shadows cast by the different nodi. High sun angles made short shadows and low sun angles made long shadows. I photographed the results (see below)

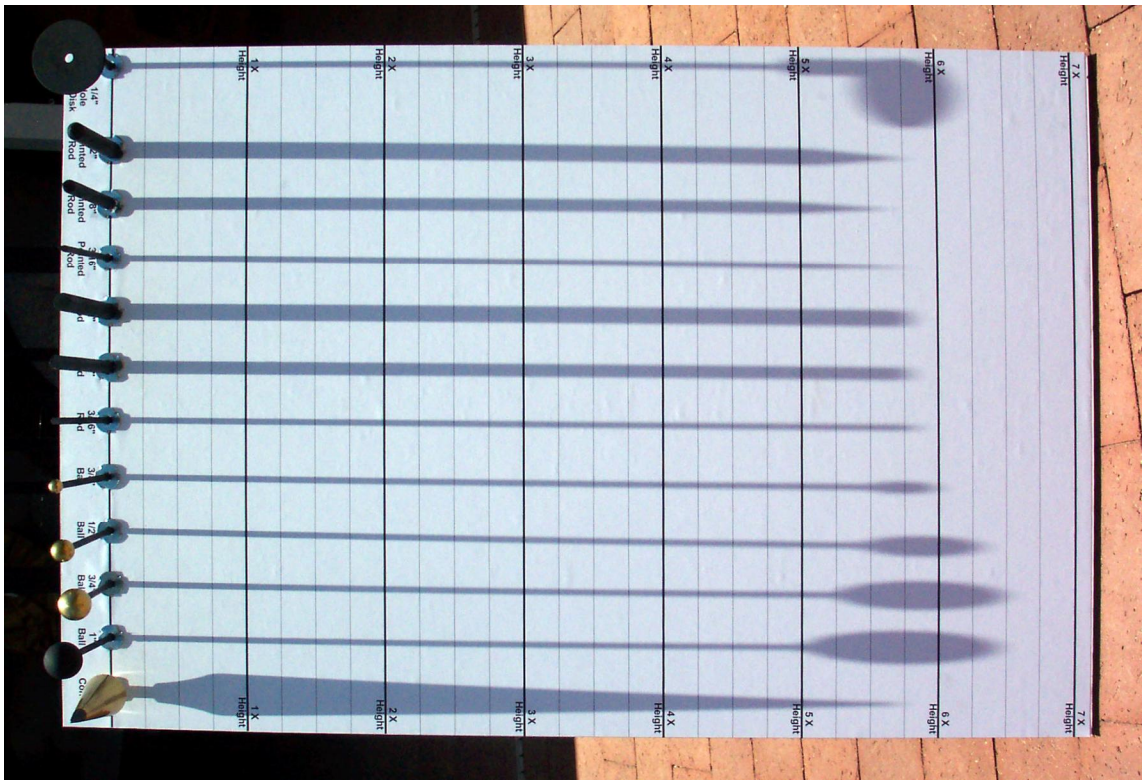
Conclusions: High sun angles created short shadows and low sun angles produced long shadows. In all cases, the shorter shadows are easier to read than longer shadows because they are darker and there is less fuzziness around the edges. Truncated rods and balls produce the least accurate shadows and the pointed rods and the cone produce the most accurate shadows. Thick rods are easier to see from a distance than thin rods. The hole-in-disk nodus also produces an accurate reading, but only if the shadow is short because the projected image disappears at low sun angles. I my opinion the cone and the thick pointed rod produce the easiest to read and the most precise shadows.



Edge-on view showing the different nodi attached to the board



Short Shadows produced by a high sun angle



Long Shadows produced by a low sun angle